

# NEBRASKA ALIGNMENT FOR NIH SUPPLEMENT HUMAN GENETIC VARIATION

HUMAN GENETIC VARIATION		
Nebraska Science Standards– Grades 9 - 12		
Activity	Standard	Example Indicator
3	12.1.1.a	Predict and evaluate how change within a system affects that system.
3	12.1.1.b	Design solutions to problems identified within a system.
3	12.1.2.a	Create a physical, mental, or mathematical model to show how objects and processes are connected.
3, 4	12.1.2.b	Test the usefulness of a model by comparing its predictions to actual observations.
3	12.1.2.c	Understand that the way data are displayed affects interpretation.
3, 4	12.1.2.d	Evaluate the reasonableness of answers to problems.
3, 4	12.1.2.e	Understand that larger well-chosen samples produce more accurate estimates of the characteristics of the total population.
3, 4	12.1.2.f	Understand that a correlation between two variables doesn't mean that either one causes the other.
3	12.1.3.b	Compare data for two groups by using averages and ranges of values.
2, 3	12.2.1.a	Formulate questions and identify concepts that guide scientific investigations.
2, 3	12.2.1.b	Design and conduct scientific investigations.
2, 3	12.2.1.c	Use technology and mathematics to improve investigations and communications.
2, 3, 4	12.2.1.d	Formulate and revise scientific explanations and models using logic and evidence.
2, 3, 4	12.2.1.e	Recognize and analyze alternative explanations and models.
2, 3, 4	12.2.1.f	Communicate and defend a scientific argument.
2	12.4.2.a	Investigate and describe how DNA carries the genetic code.
2, 3, 5	12.4.2.c	Investigate and explain how some mutations could help, harm, or have no effect on individual organisms.
2	12.4.3.a	Understand that the concept of biological evolution is a theory which explains the consequence of the interactions of: (1) the potential for a species to increase its numbers; (2) the genetic variability of offspring due to mutation and recombination of genes; (3) a finite supply of the resources of life; and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring.
1, 2, 3	12.4.3.b	Investigate and use the theory of biological evolution to explain diversity of life.

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3	12.6.1.a	Propose designs and choose between alternative solutions of a problem.
3	12.6.1.b	Implement the selected solution.
3	12.6.1.c	Evaluate the solution and its consequences.
3	12.6.1.d	Communicate the problem, process, and solution.
3	12.6.2.a	Explain how science advances with the introduction of new technology.
2, 3	12.6.2.b	Understand creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering.
2, 3, 4, 5	12.7.1.b	Investigate and explain how diseases are prevented, controlled, and cured.
2, 3, 4, 5	12.7.1.c	Investigate and explain how genetic traits affect a person's health.
4, 5	12.7.1.d	Investigate and analyze risks and benefits in making decisions about personal and community health.
2, 5	12.7.6.b	Investigate and understand that social issues and challenges may affect advancements in science and technology.
2, 3	12.8.1.c	Recognize science as one way of answering questions and explaining the natural world.
2, 3	12.8.2.b	Create scientific explanations consistent with experimental and observational evidence; make accurate predictions; strive to be logical; respect the rules of evidence; accept criticism; report methods and procedures; and make knowledge public.
2, 3	12.8.2.c	Understand that all scientific knowledge is, in principle, subject to change as new evidence becomes available.
2, 3	12.8.3.b	Understand that changes in scientific knowledge evolve over time and almost always build on earlier knowledge.
2, 3, 5	12.8.3.c	Understand that some advancements in science and technology have long-lasting effects on society.
<b>Nebraska Mathematics Standards – Grades 9 - 12</b>		
<b>Activity</b>	<b>Standard</b>	<b>Description</b>
1, 2, 3, 4	12.1.2	Express the equivalent forms of numbers using exponents, radicals, scientific notation, absolute values, fractions, decimals, and percents.
1, 2, 3, 4	12.2.1	Solve theoretical and applied problems using numbers in equivalent forms, radicals, exponents, scientific notation, absolute values, fractions, decimals, and percents, ratios and proportions, order of operations, and properties of real numbers.

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1, 2, 3, 4	12.2.3	Perform estimations and computations of real numbers mentally, with paper and pencil, and with technology.
1, 2	12.3.1	Select and use measuring units, tools, and/or technology and explain the degree of accuracy and precision of measurements.
4	12.5.1	Select a sampling technique to gather data, analyze the resulting data, and make inferences.
1, 2, 3, 4	12.6.4.d	Represent a problem in multiple formats (words, graphs, and symbols).
<b>Nebraska Reading / Writing Standards – Grade 12</b>		
<b>Activity</b>	<b>Standard</b>	<b>Example Indicator</b>
2, 3, 4	12.1.1.a	Read selections to develop and answer literal, inferential/interpretive, and critical questions.
1, 2, 3, 4	12.1.1.b	Interpret information from graphs, charts, and diagrams, such as maps, blueprints, or schematics.
2, 3, 4, 5	12.1.1.c	Answer literal, inferential/interpretive, and critical questions.
2, 3, 4, 5	12.1.2.b	Use electronic resources (CD-ROM, software, online resources, and multimedia presentation tools).
2, 3, 4, 5	12.1.6.b	Analyze who, what, when, where, how, why, what if questions to interpret nonfiction text.
All activities	12.1.6.c	Analyze information from charts, maps, and graphs.
All activities	12.2.1	Write using standard English (conventions) for sentence structure, usage, punctuation, capitalization, and spelling.
All activities	12.2.2.d	Write narrative, descriptive, and/or expository compositions.
All activities	12.2.4.a	Develop narrative, persuasive, descriptive, technical, and/or expository writing for a designated audience and purpose.
All activities	12.2.4.b	Write to describe, explain, persuade, inform, and/or entertain.
All activities	12.3.1.a	Participate in and lead group discussions.
All activities	12.3.1.b	Evaluate and monitor self and peer participation in group discussions.
<b>National Health Education Standards – Grades 9 – 12: cited from pre-publication document of National Health Education Standards, Pre K-12, American Cancer Society, December 21005 – August 2006</b>		
<b>Activity</b>	<b>Standard</b>	<b>Description</b>
4, 5	1.12.1	Predict how healthy behaviors can impact health status.

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2, 3, 4, 5	1.12.4	Analyze how genetics and family history can impact personal health.
4, 5	1.12.5	Propose ways to reduce or prevent injuries and health problems.
4, 5	1.12.7	Compare and contrast the benefits and barriers to practicing a variety of healthy behaviors.
4	1.12.8	Analyze personal susceptibility to injury, illness, or death if engaging in unhealthy behaviors.
4	1.12.9	Analyze the potential severity of injury or illness if engaging in unhealthy behaviors.
4, 5	2.12.1	Analyze how family influences the health of individuals.
4	2.12.3	Analyze how peers influence healthy and unhealthy behaviors.
4, 5	2.12.8	Analyze the influence of personal values and beliefs on individual health practices and behaviors.
4	2.12.9	Analyze how some health risk behaviors can influence the likelihood of engaging in unhealthy behaviors.
5	2.12.10	Analyze how public health policies and government regulations can influence health promotion and disease.
5	3.12.1	Evaluate the validity of health information, products, and services.
5	3.12.4	Determine when professional health services may be required.
4, 5	5.12.1	Examine barriers that can hinder healthy decision-making.
4, 5	5.12.2	Determine the value of applying a thoughtful decision-making process in health related situations.
5	5.12.3	Justify when individual or collaborative decision-making is appropriate.
5	5.12.5	Predict the potential short and long-term impact of each alternative on self and others.
4, 5	5.12.6	Defend the healthy choice when making decisions.
4, 5	5.12.7	Evaluate the effectiveness of health-related decisions.
4, 5	7.12.1	Analyze the role of individual responsibility for enhancing health.
4	7.12.2	Demonstrate a variety of healthy practices and behaviors that will maintain or improve the health of self and others.
4	7.12.3	Demonstrate a variety of behaviors to avoid or reduce health risks to self and others.
4, 5	8.12.2	Demonstrate how to influence and support others to make positive health choices.
4, 5	8.12.4	Adapt health messages and communication techniques to a specific target audience.